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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 452,749	12/01/1999	ALEXANDRE M. ZAGOSKIN	M-7971-US	1708

7590 05/10/2002

PENNIE & EDMONDS LLP  
3300 HILLVIEW AVENUE  
PALO ALTO, CA 94603

EXAMINER

WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/452,749

Applicant(s)

ZAGOSKIN, ALEXANDRE M

Examiner

Douglas A Wille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 28-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 28-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 17 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 32, 38, 44, 47, and 51 – 65 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 32, 38, 44, 47, 51 and 61 refer to a parity key as a grounding mechanism. It is not understood what a parity key is. Is it parity check?

4. Claims 52 – 55 refer to clockwise and counterclockwise circulating supercurrents. It is not understood where these supercurrents are circulating.

5. Claims 56 – 59 refer to a twice degenerate state. It is not understood what the twice degenerate state refers to. If this is a reference to the circulating supercurrents, see 4. above.

6. Claims 60 and 64 refers to tunneling between the degenerate states. See 5. above.

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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2. Claims 1 – 18 and 28 – 65 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 27 of copending Application No. 09/855,817. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would be obvious to make the islands mesoscopic. Additionally since it is known to use JJs and SETs in circuitry, it would be obvious to do so.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3 – 5, 28, 29, 33, 34, 54, 56, 58 and 60 - 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Ishimaru et al.

9. Char et al. show the formation of grain boundary JJs of high temperature superconductor material (see cover Figures and column 2, line 3 et seq.) where an island 310 is connected to a body 312. Char do not specify that part of the device is mesoscopic but Ishimaru et al. show a superconducting element (see Figure 1 and column 2, line 66 et seq.) where the neck is 5 microns wide (column 3, line 50). It would have been obvious to make part of the structure mesoscopic as a design alternative. With respect to claims 54, 56 and 58, Char et al. show a SQUID which can have oppositely directed currents. With respect to claims 60 – 63, tunneling

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occurs in the SQUID and with respect to claims 64 and 65 it is known to use a field generator to effect the device.

10. With respect to claim 34, it would have been obvious to use a metal as a weak link since it is known in the art and would be a design alternative.

11. Claim 2, 30, 31 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Ishimaru et al. and further in view of Shnirman et al.

12. Char et al. show the basic device and Shnirman et al. show the use of a SET to read out a JJ q-bit (see Figure 1 and page 57, second column et seq.). It would have been obvious to modify the Char et al. device to include the SET to provide a readout for the Char et al. device. With respect to claim 52, Char et al. show a SQUID which can have oppositely directed currents.

13. Claims 6 and 8 - 10, 35, 39, 40, 41, 53, 55, 57 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Ishimaru et al. and further in view of Baechtold et al.

14. Baechtold et al. show a binary circuit consisting of a series/parallel arrangement of JJs (see Figure 4 and column 5, line 57 et seq.). It would have been obvious to use the Char et al. structure in the Baechtold et al. device to provide the JJs. With respect to claim 53, 55, 57 and 59, Char et al. show a SQUID which can have oppositely directed currents..

15. Claim 7, 11 and 12 - 18, 36, 37, 42, 43, 45, 46 and 48 - 50 in so far as they are understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Ishimaru et al., Baechtold et al. and further in view of Shnirman et al.

16. With respect to claims 7, 11, 36, 37 and 43 it would have been obvious to use the Shnirman et al. structure to provide a readout for the device.

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17. With respect to claims 12 - 18, 42, 45, 46 and 48 - 50 it would be obvious to apply the structures described above in various combinations since the basic combination is shown.

18. In so far as they are understood, claims 32, 38, 44, 47 and 51 are rejected under the art shown above since it would have been obvious to use a parity check.

***Response to Arguments***

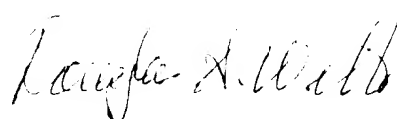
1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Douglas A. Wille  
Patent Examiner

May 7, 2002